

## ‘Net-System’ Models Versus Traditional Models in NWFP Marketing: The Case of Mushrooms

Laura Secco · Davide Pettenella · Daria Maso

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**Abstract** Marketing strategies for successful non-wood forest product (NWFP) commercialization are important especially in those rural economies where NWFPs represent a considerable source of income for small and medium-scale forest-based enterprises. Two different organisational models in mushrooms marketing—a ‘traditional approach’ and a ‘net-system approach’—are compared through a case-study research approach. The first model is usually based on single large-scale enterprises producing large quantities of standardized, mass-market oriented products; its main commercial goal is the improvement of the value-chain from producer to end-users, with no special links or integration between the production area and the producers. The second, quite new approach is based on several integrated small and medium-scale rural-based enterprises supplying relatively limited quantities of high quality products, oriented to niche markets. In this case, product specialty identification, complementary actions, integration, and clustering among small and medium enterprises (SMEs) within the same production area are the most important goals. In the case studies, both organisational models have proved to be feasible and working with respect to the respective goals. Traditional large-scale enterprises, based on vertical integration and a short value chain, can achieve substantial economic performance; however, these are unlikely to have a significant positive impact on the socio-economic local context and are threatened by high business risk (mainly due to its strong specialization on a ‘climate-dependent’ NWFP). The analysed forest-based business model founded on networking, which involves not only forest-based SMEs but also other institutional, economic, and social actors, has proved to be not only economically viable and less risky with respect to the traditional model, but also more equitable in distribution of benefits, and effective in stimulating the local economy as a whole, integrated system based on NWFPs and related environmental services.

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L. Secco (✉) · D. Pettenella · D. Maso

Department of TESAF, University of Padova, Via dell’Università 16, Legnaro 35020, Italy  
e-mail: laura.secco@unipd.it

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## Introduction

Wild mushrooms are non-wood forest-products (NWFPs) with a high potential economic role in several countries. In Southern and Western European countries, mushroom average production value has been estimated in the range of 0.8–10 € per hectare of forest per year (Merlo and Croitoru 2005). The level is most likely underestimated, because in several countries substantial quantities of mushrooms collected for self-consumption or sold in small local markets are not recorded. Average market prices are relatively high in some countries, thanks to a higher demand for the products: in Italy, for example, according to official statistics, wild fresh mushrooms have a selling price in markets of about 6–15 €/kg (Pettenella and Kloehn 2007). But often mushrooms do not have transparent markets; rather, informal business activities prevail, especially in the initial stages of the market value chain, and their real value can be considerably higher than officially reported.<sup>1</sup>

In most of the North European and Mediterranean countries mushrooms are considered public property. Collection is regulated by local authorities through permits and is free up to a quantity limit. In many cases, regulations are either not established or not enforced (Saastamoinen 1999). Especially in Western European countries, a large part of mushroom production is a by-product of tourism or recreational activities, enjoyed by visitors and the local community as a whole (Merlo and Croitoru 2005).

In this article, two alternative organisational models of the wild mushrooms economy are compared. The next section introduces the two models: the focus is on the theories connected with the creation of economic networks, which is a relatively new strategy in the forestry sector. After a brief description of the research steps and method, the two case-studies are reported. The discussion on the empirical findings is then presented and some final observations drawn.

## Organisational Models in NWFP Marketing

With respect to the commercialization and the marketing of NWFPs including mushrooms, on the basis of value chain analysis and case studies review, two main distinct models can be identified (Neumann and Hirsch 2000; Jäger 2005; Marshall et al. 2006; te Velde et al. 2006; Jensen 2009) referred to here as the *traditional approach* and the *net-system approach* (after Pettenella et al. 2007).

The traditional approach generally involves one large-scale enterprise producing huge amounts of a standard product for a mass-market, for which the main objective

<sup>1</sup> Croitoru and Gatto (2001) estimated the value of mushroom harvesting in Italy to be much higher than official figures, at about 60 M € per year, assuming 3 kg/ha of mushrooms collected and 4 M ha of mushroom-producing forests.

is often to increase profit in the value chain, which might be export-oriented, thus acting within a global value chain (te Velde et al. 2006). This *large enterprises* strategy, where producers are distant from consumers, usually does not include the development or enforcement of links between the production area and the producers. In some cases, there is cooperation with other enterprises of the same sector, but this takes shape as a vertical integration where the large enterprise involves other and smaller enterprises as sub-contractors. Such a kind of organisational model can be described as a 'captive value chain', where individuals or a few key entrepreneurs govern the entire value chain and a large number of small suppliers with low capabilities depends on the lead firm(s) for their transactions (Gereffi et al. 2003, cited in te Velde et al. 2006). In these kind of value chains, suppliers are expected to maintain simple tasks (i.e., fresh mushroom collection), while key entrepreneurs maintain the control on more complex tasks (i.e., logistics and process technology improvement, marketing). A good example of this approach, based on the 'key entrepreneur' concept, is represented by Dalla Valle Company in Finland.

The second approach is based on several integrated small and medium-scale rural-based enterprises supplying relatively limited quantities of high quality products oriented to niche markets. In this case, small and medium enterprises (SMEs) do not necessarily produce the same product. Rather, they often produce various products (and services) that are strictly connected and integrated. It is then possible to speak of a *net-system*, in which SMEs produce complementary products and act as a strategic network<sup>2</sup> (Jarillo 1988). The role of SME networks consists in promoting reciprocal interdependencies in which members provide inputs and receive outputs from each other (Human and Provan 1997). SMEs can use strategic alliances and create networks to build on innovative capability, to overcome weaknesses such as a poor financial position or a low level of expertise in production, marketing and management (Jarrat 1998), to remain small, flexible and adaptable and in the meanwhile gain specialisation, to have the opportunity to compete effectively in larger global markets (Dennis 2000). The net-system model in mushroom marketing is therefore a form of horizontal network among enterprises, acting at the same level (and not as sub-contractors), being located in a same territory, utilizing the same raw NWFP for producing various final products (often for a niche, local market) or providing services that are jointly marketed and commercialized. Not only mushrooms enterprises are important, but other stakeholder groups (local authorities, tourists, logging companies, farmers) play a relevant role. An integrated economic system, based on the coordinated supply of NWFPs and related environmental services, is consequently created.

Human and Provan (1997, p. 372) proposed an even more narrow definition of a network, as 'an intentionally formed group of small and medium-sized profit-oriented firms in which the firms: (1) are geographically proximate, (2) operate within the same industry, potentially sharing inputs and outputs, and (3) undertake

<sup>2</sup> A strategic network may be defined as a long-term, purposeful arrangement among distinct but related for-profit organizations that allows their firms to gain or sustain competitive advantage vis-à-vis their competitors outside the network (Jarillo 1988).

direct interactions with each other for specific business outcomes. The interactions may include joint production, new product development, collective marketing, and employee training'. In such a kind of organisational model, cultural ties or networks within the local community play often a paramount role in ensuring positive results for NTFP commercialisation; te Velde et al. (2006, p. 737) refer this as a 'relational value chain'. These definitions suit perfectly to describe the net-system approach, based on the 'local networks' concept, applied by the Borgotaro Consortium organisation in Italy for mushrooms marketing.

## Research Steps and Method

The article is based on the comparison between two case studies, which have been identified and selected according to the following criteria: (i) they both are located in the European forestry context, respectively, in the rural area of North Karelia in Finland and in the mountain area of Borgotaro, on the border between Emilia-Romagna and Tuscany Regions in Italy; (ii) they both are based on the successful marketing of the same product (namely *Boletus* sp. mushrooms); and (iii) they are paradigmatic of the two organisational models for mushrooms production and marketing which the article focuses on.

While the Finnish case study concerns the mass market-oriented traditional model adopted by Dalla Valle Company (based on the 'key entrepreneur' concept), the Italian case study concerns the specialty-oriented innovative net-model adopted by Borgotaro Consortium (based on the 'local network' concept). Quantitative data

**Table 1** Investigation methods for the two case studies

Case study location	Dalla Valle Company, Finland	Borgotaro Consortium, Italy
Main survey goal	To explore: (a) the value chain for mushrooms of Dalla Valle Company, and (b) the socio-economic characteristics of mushroom pickers.	To analyse the value chain for mushrooms of Borgotaro Consortium and the local community.
Collecting data methods	In regards to (a): in-depth open-ended interviews of Dalla Valle Company staff, direct observations, and internal documents review.  In regards to (b): formal structured survey (25 closed questions, in English and Finnish).	Documents review and semi-structured key informant interviews.
Number of interviews and types of stakeholders	In regards to (a): Dalla Valle Company managers ( $n = 3$ ) (the owner, the production manager, the marketing manager).  In regards to (b): mushroom pickers, mainly in North Karelia ( $n = 1652$ , 1112 feedback, response rate: 67.3%).	Key informant local stakeholders ( $n = 20$ ), included: mushrooms pickers, local public authorities (municipalities and their associations, agencies for forest and soil protection, tourism services), landowners, traders, tourist agents and their associations.
Survey period	One year: September 2007–2008	15 days: summer 2007

and qualitative information used for comparison are based on in-depth investigations carried out in the field by interviewing local stakeholders in order to contextualise the survey (following the method of Marshall et al. 2006), even if their respective goals and specific collecting data methods are slightly different (Table 1).

The research hypothesis forming the basis of the article was that, despite of different organisational arrangements of the value chain and different marketing strategies, both models have positive business results in term of income generation and market performance of mushrooms commercialisation in Europe. But the net-system model has significant additional socio-economic values for small-scale landowners in rural areas.

Following Yin (1993), the two cases can be considered as *exploratory–explanatory* case studies. An explanation-building strategy (following Trochim 1989) was applied to analyse them, for which results are reported below.

## Empirical Findings: Key Entrepreneur and Local Networks

### An Application of the Traditional Organisational Model: Dalla Valle Company<sup>3</sup> in Finland

Mushroom collection has traditionally been an important form of forest use in North Karelia. According to Saastamoinen et al. (2000), 56% of the households in the region gathered mushrooms in 1997. One reason behind the popularity of mushroom (as well as berry) picking is the exceptionally extensive everyman's rights in Finland, following generally accepted traditions or customary rights that are included in several laws and regulations. Moreover, Finland developed various public measures aimed at increasing the utilization of NWFPs, the most powerful of which are tax relief measures (Saastamoinen 1999). In addition to recreation, mushrooms picking is financially viable. In North Karelia the tax-free earnings received from mushroom picking are an important source of extra income (Metsäkeskus 2005). Nevertheless, up to the end of the 1990s these NWFPs were considered to be underutilized, with only an estimated 1–3% of the mushrooms collected, and a need recognised by the Ministry of Agriculture and Forestry in 1995 for increasing rates of utilization by 30% and the industrial use of the products by 10% (Saastamoinen 1999). Wild mushrooms had only a minor role compared to wild berries (4–8% vs. 40–80%) as a component of the total income from NWFP picking in the period 1990–1996 (Olmos 1999).

Dalla Valle Company is a large-scale enterprise established in Finland in 1996 by an Italian entrepreneur. It embodies the mass market-oriented traditional approach and it is the leading Finnish enterprise in the market of fresh, frozen, and brine boletus (Vidale 2009). From 1997 to 2004, by undertaking substantial investment, the firm grew spectacularly in terms of infrastructure, technology and number of

<sup>3</sup> More information on the Company, as well as about collecting boletes, is available at: <http://www.dallavalle.fi>.

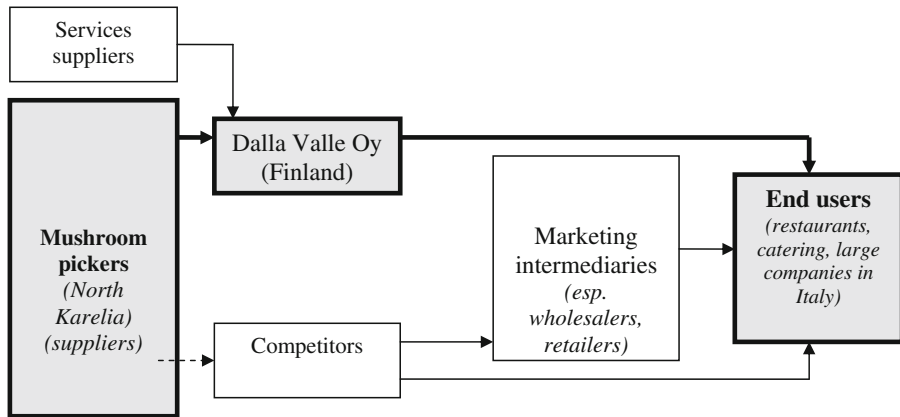
collecting lines. In 8 years, the firm grew from 1 to 30 collecting lines, built two refrigeration centres and expanded its collecting area from only one purchase place to all of North Karelia. The firm is mentioned as an example for improving business in the natural products sector in the North Karelia Forest Strategy 2006–2010 (Metsäkeskus 2005). In the area, the quantities of collected and processed mushrooms has varied greatly year by year, due to the highly varying weather conditions, from only 70 tons and 20 tons, respectively, collected in 1997 and 1999, up to a whole traded mushrooms volume of about 270 tons in 1998 and 370 tons in 2000 (including 20 tons of pickled mushrooms) and to about 1100 tons in 2003. In 2003, 90 truckloads of mushrooms (containing 11,500 kg/truck of frozen *Boletus* mushrooms and 5000 kg/truck of fresh *Boletus* mushrooms) were delivered to Italy. The firm became the ‘world price-maker’ for the Italian market, being 99% of Italian *Boletus* mushrooms imported from Finland. From 2004 until today, no significant new investment has been undertaken in the supply chain. During these years, the annual amount of forest mushrooms collected varied again significantly, from a maximum of 300 tons in 2006 to a minimum of 100 tons in 2007. The enterprise currently is undergoing internal reorganisation.

Despite the large amounts of processed and traded products, the company is directly managed by its owner with the help of only two external consultants. A varying number of seasonal workers (25–150) is employed in the refrigerator centres and in the collecting lines. For supply of raw material, the firm relies on a varying number of pickers (1000–21,000), consisting of individuals, families and groups who collect mushrooms in the forest (the average collected volume is 20–50 kg/picker<sup>4</sup>) and then sell them directly to Dalla Valle Company. In the exceptional year 2003, the North Karelian pickers received an income of more than 4 M € for the mushrooms (Metsäkeskus 2005), more than half paid by Dalla Valle Company to its pickers. In 2007, the collected volume was only about 3–4 kg/picker: due to the scarcity, the mushrooms prices were considerably higher than in normal years, and in addition Dalla Valle Company decided to pay its pickers above the usual rate (to protect the image of the firm created over many years and for maintaining reliable relationships and trust with its suppliers).

When just established in Finland, the firm introduced a strong logistic innovation: mushrooms were no longer sold in the local city markets by the pickers, but directly to the firm, which organised several collecting lines (trucks moving around in the country, for directly meeting the pickers and immediately paying in cash for the mushrooms). The main strengths of the firm under this new collection arrangement are cost reduction and the direct deal relationship between pickers and owner. A very short value chain is maintained, avoiding intermediaries (Fig. 1). Under the direct collection approach, all problems are drawn directly to the notice of the firm’s owner; everybody can call him and state their problems. This leads to a close social integration of the firm. Despite such a social success, no special links between the enterprise and the territory have been created and no investments in forest

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<sup>4</sup> In 2003, the average collected volume of wild mushrooms was about 500 kg/picker (Metsäkeskus 2005).



**Fig. 1** Value chain map for Dalla Valle mushroom-related activity

management are made for improving or maintaining the forest capacity to produce mushrooms.

### The Specialty-Oriented, Innovative Net-System Model: Borgotaro Consortium<sup>5</sup> in Italy

One of the most remarkable examples of mushroom market development in Italy is the community forest in Borgotaro area (which includes the area of three municipalities), where a relatively large business activity is based on special silvicultural management measures, picking activities, and processing and selling of local and imported mushrooms. The successful marketing of Borgotaro mushrooms is based on a long tradition: the trade of the local *Boletus* is known to date back at least to the 17th century.<sup>6</sup> Nowadays only four species<sup>7</sup> are sold under the *Fungo di Borgotaro* label, which is the European Commission Protected Geographical Indication<sup>8</sup> (PGI) certification for mushrooms. Beech, chestnut and oak forests managed as coppice with saplings (up to 100/ha) with rotation periods of 35 years have been recognized as the most productive management system for mushrooms.<sup>9</sup> *Boletus* harvesting is a typical seasonal activity, concentrated in late spring, early

<sup>5</sup> More information on the Borgotaro Consortium, its territory and members, as well as on rules for collecting mushrooms, is available at <http://www.fungodiborgotaro.com>.

<sup>6</sup> The first two local enterprises for marketing *Boletus* mushrooms were founded at the end of the 19th century, one of which still exists. At that time, mushrooms were dried and exported to North and South America. Since 1934 *Boletus* mushrooms of the region have been collected and sold under the name *Fungo di Borgotaro*.

<sup>7</sup> The four species are *Boletus edulis*, *B. aereus*, *B. aestivalis* and *B. pinicola*.

<sup>8</sup> This certification scheme can be applied to foodstuff which are produced, processed or prepared in a particular geographical area.

<sup>9</sup> The long-term presence in the Borgotaro forests of mycorrhiza and spores of *Boletus* spp., not disturbed by improper management systems and external factors, has gradually led to an increase in mushroom growing (Giovannetti et al. 1998).

summer and autumn. The site generates 15–20 kg/ha/year, with large fluctuations due mainly to climate. In 2005, for example, the total production was estimated at between 150 and 200 tons. Such a production is not enough to cover the local and national demand for mushrooms from the Borgotaro area, so demand has to be satisfied by importing from neighbouring Italian regions and from Eastern Europe and China. Thus, production of only about 60–80 tons/year is identified by PGI certification.

Almost all the industrial processing activities are based on imported mushrooms and therefore market segmentation occurs in Borgotaro. Fresh mushrooms for sale to final consumers and for restaurants and agrotourism facilities mainly come from local forests: those locally marketed with the EC PGI label are only 5% of mushrooms sold in the area. Mushrooms used by processors and sold dried, in oil or frozen come mainly from outside the Borgotaro area and benefit from the public recognizing that they have been processed in an area famous for quality. Thus, in Borgotaro the impacts in terms of added value and employment in the mushroom industry go far beyond the activities linked with selling local *Boletus*.

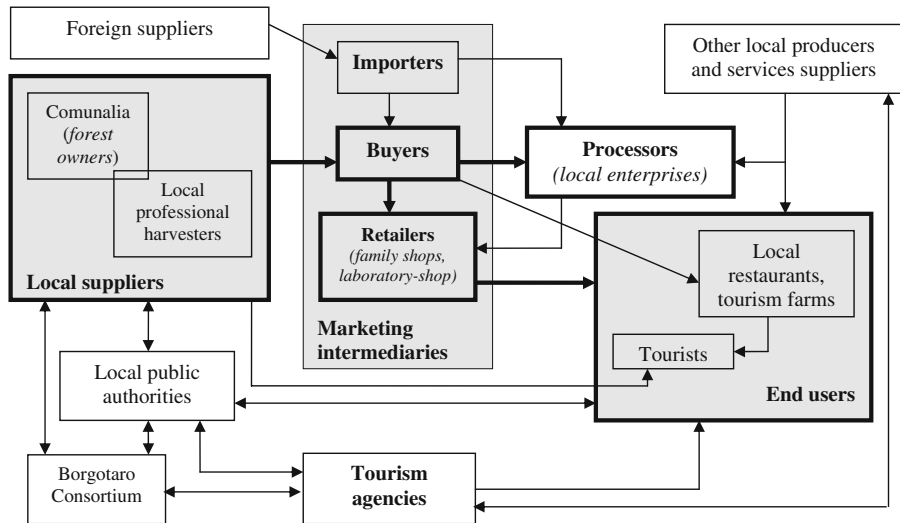
Borgotaro forests are community forests owned by local village residents. The basic forest management unit at the village or borough level is the *comunalia*.<sup>10</sup> While an association of *comunalia* provides general services to forest owners, an ad hoc consortium was established in 1995 to help obtain the EC trademark and organise mushroom marketing. Consortium members are residents, *comunalia* associations, and buyers and processors of PGI mushrooms. Mushrooms are harvested by *comunalia* members who have access and by commercial collectors and tourists who pay for permits. Notably, under current legislation, in Italy forest owners and their associations are not allowed to make money from cultivating, collecting and selling mushrooms, these not being public goods. Local public authorities and forest owner associations (like *comunalia*) are allowed to sell daily, weekly, monthly or seasonal permits for collection<sup>11</sup> (Pettenella and Kloehn 2007). These permits are usually free to the local population (residents), while people living around the picking areas enjoy special conditions (such as reduced fees and higher allowed quantities).

Apart from the few hundred local professional mushroom collectors working 3–4 months per year and the tourists, the mushroom business in Borgotaro and surrounding areas creates employment for many people, within a net-system which involves the economic agents directly connected to the mushrooms business and other stakeholders (Fig. 2). As a *proxi* to the significant socio-economic impact of the mushrooms business within the local community, the related employment and income opportunities can be mentioned. For example, six companies in the area trade mushrooms fresh or frozen, dried, in oil or as specialties; two large industrial firms specializing in processing imported mushrooms employ 20 and 8 people, respectively. Although they mainly use imported mushrooms, they take advantage of their location, as consumers appreciate mushrooms processed in Borgotaro even

<sup>10</sup> More information about *comunalie* institution is available at: <http://www.comunalie.com>.

<sup>11</sup> For example, daily permits allow collection of not more than 2 kg of mushrooms per person, at a fee of about 4–15 €/permit.





**Fig. 2** Value chain map for Borgotaro mushrooms-related activities

if they have not been harvested locally. There are also two small family firms that make and sell mushroom specialties for tourists. One enterprise (a shop and a laboratory associated with a restaurant) buys, processes, and sells locally harvested mushrooms under the PGI trademark. Cleaning, sorting, and processing are traditionally done by hand. They sell fresh mushrooms to consumers in the shop and prepare mushroom specialties in the laboratory; part of the production is used in the restaurant. Four people are employed permanently in the laboratory-shop and 10 are employed seasonally to clean the fresh mushrooms. Another enterprise, which employs two permanent people, buys large quantities of locally harvested mushrooms and then sells to local and external retailers. Other sources of indirect employment are restaurants that prepare mushroom-based dishes and 25 family grocery stores in the valley that also sell fruit and other vegetables. Some processing companies have established web pages for e-business. Beside mushrooms, most sell other specialties from NWFPs of the region, such as chestnuts, jam and syrup of forest berries, and other specialties obtained from agricultural products, including olives, oil and vegetables.

Mushrooms are sold from the collector directly to local restaurants, to buyers, to brokers, and occasionally to processors. The prices rise from 7 €/kg from the collector to the buyer, to 13–15 €/kg to the broker stores, up to a maximum of 40 €/kg in a food speciality shops in Milan. For the final consumer a normal price of the Borgotaro mushroom is 15–25 €/kg. The total value of mushroom production was estimated to be about 2.4 M € in 2005, assuming an average price of 12 €/kg (Mortali A (2006) Borgotaro Consortium. Director, Borgo ValdiTaro (Parma–Italy) Personal communication). The price for a daily picking permit is between €6 and €15 and for a 6 months period between €67 and €150. About 30,000–35,000 picking permits are sold per year for a total of €300,000 (assuming an average of €10 each).

In 2005, a bumper year, 36,000 permits were sold, producing an income of €420,000, nearly all of which was returned to forest owners' associations. From this it can be estimated that the total income from mushroom production and selling of permits in 2005 was just over €2.8 M or about €128 per hectare of forest.

Earnings from mushroom selling are not the only source of mushroom-related income for the local population<sup>12</sup>: there are important indirect impacts on recreational and tourism enterprises (including restaurants, shops, bed and breakfasts providers and hotels). Permit sales are used for improving forest management and for the control of illegal collectors, as well as for the maintenance of forest roads, trails, fountains and other small-scale tourist facilities. This creates additional employment opportunities for local people, even outside the harvesting season.

## Results and Discussion

The two organisational models described above are compared in Tables 2 and 3, in general terms and in terms of the marketing mix, respectively. The Dalla Valle Company traditional model is based on a single large-scale enterprise producing large quantities of standard mass-market oriented products. Its main commercial goal is the improvement of the value-chain from producer to end-users, by reducing or avoiding marketing intermediaries and with no special links or integrations between the production area and the producer itself. The most relevant variables (in term of the marketing mix) include relatively low price with respect to specialty-products, product standardisation (three main quality categories) and distribution channel (direct and strong commercial links between Dalla Valle Company in Finland and the Italian market). The weather conditions, by affecting the total amount of mushrooms that can be collected and processed annually, are the most relevant factor influencing the firm's production capacity and its business risks. Mushroom prices, at least for some groups of pickers (e.g., Russians), are often defined case by case. The factors influencing the pricing are the high suppliers' unreliability, the need for maintaining the pickers' trust in the firm, and the lack of strictly economic criteria for deciding the price.

The Borgotaro innovative net-model is based on strong connections established among various economic and institutional actors at local level, with a special link between the production area and the products. Such a link is so strong and recognised by the market that even mushrooms imported from foreign countries, but locally processed, are perceived as special products simply for being related to the Borgotaro area. The most relevant marketing mix variables include: high product differentiation (mainly based on the production area by means of PGI certification); strong links among economic, social and political actors in the area (that allow the coordination and support needed for reaching the common objective of the

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<sup>12</sup> Other products from this activity are firewood and potentially charcoal. Due to the high cost of labour these products cannot compete with wood and charcoal imported from Balkan countries.

**Table 2** General comparison aspects between the two organisational approaches

Market model	Dalla Valle Company (Finland)	Borgotaro Consortium (Italy)
Year of creation	1996	1995
Marketing approach	Mass-market oriented	Specialty-oriented
Innovation degree	Low: traditional model	High: innovative model
Value chain	Vertical integration, short chain	Horizontal integration, net-system
Mushroom-collecting forests	Very large: mainly North Karelia forests	Quite limited: community forests (owned by the residents of the local villages) in 3 municipalities, with a total area involved of about 22000 ha (to be enlarged to 60000 ha) (plus, imported mushrooms from Eastern Europe and China)
Volume of exploitation	Extensive model to collect mushrooms (over approx. 1.4 M ha in North Karelia).  Various: min 20 tons/year (in 1999)—max 1100 tons/year (in 2003). As an average, in 1997–2007: about 280 tons/year	Intensive model to produce mushrooms (in a well-defined area, of about 22000 ha)  Various: 330–440 tons/year (with an average production of 15–20 kg/ha/year). In 2005, volume estimated at about 150–180 tons
Infrastructures and other resources	30 collecting lines, two refrigerator centres (plus an external one, as service)	Six local enterprises for mushrooms processing and trading, one shop-laboratory-restaurant
Top management	One firm's owner, two external consultants (one for marketing in Italy and one for research, technological development and logistics)	Six entrepreneurs, consortium internal staff
Employees	25–150 seasonal workers (at refrigeration centres)  Pickers—in variable number—are not employed by the enterprise	28 full-time workers in two large industrial firms processing imported mushrooms, four full-time workers in the shop-laboratory-restaurant, 10 seasonal workers
Products/services sold	Marinate, dried, in oil, frozen mushrooms	Fresh (only seasonally, locally produced) mushrooms; dried, in oil, frozen (imported) mushrooms.  Mushroom picking permits

**Table 2** continued

Market model	Dalla Valle Company (Finland)	Borgotaro Consortium (Italy)
Main customers	Large companies, restaurants, refreshment or catering agencies	Local retailers, local restaurants, brokers. Tourists, visitors
Primary stakeholders	Mushrooms' pickers (1000–21000), service suppliers (trucks, liquid nitrogen service, aircraft cargo)	A few hundred local professional mushroom pickers, Consortium members ( <i>comunalia</i> and their association, forest owners, i.e., residents), local enterprises processing mushrooms
Secondary stakeholders	Travel agency, mushroom tourism's visitors, car rent agencies, cottages, restaurants	Municipalities' administrators, visitors and tourists, local retailers, local restaurants, and the community as a whole. Investments are made for forests maintenance
Legal framework	Tax-free earnings are paid by mushroom picking	Local public authorities or forest owners' associations are allowed to sell permits for collection
Collecting rights	Extensive everyman's right	By paying permits
Forest management's issues	<p>Main species: <i>Picea abies</i>, <i>Pinus sylvestris</i>.</p> <p>Spruce forests are usually managed for timber production, thus negatively affecting mushrooms production.</p> <p>The firm is mentioned in North Karelia Forest Strategy 2006–2010 as regards the natural products (berries, mushrooms) production.</p>	<p>Main species: <i>Fagus sylvatica</i>, <i>Castanea sativa</i>, <i>Quercus spp.</i></p> <p>Beech forests are managed as coppice for the goal of maintaining/increasing mushrooms production</p>
Risks of overexploitation or unsustainable collection rate	Approximately 30% of all the wild mushrooms in North Karelia (and about 3% in Finland) are collected by Dalla Valle Company. Minor risks in term of social unsustainability can be foreseen only near the cities (if there is high competition for mushrooms collection because of picker congestion, opportunities for income sources are reduced).	Limited or no risks: clear and enforced regulation for collecting, strict monitoring activity by the Consortium, forests carrying capacity defined through scientific studies

economic development of the territory); and promotion strategy based mainly on the development of the 'Road of Borgotaro Boletus' (territorial marketing instrument) and on the e-marketing and e-commerce implementation.

**Table 3** Comparison between the two marketing approaches based on the marketing mix variables

Marketing mix variables/factors for success or problems	Dalla Valle Company (Finland)	Borgotaro Consortium (Italy)
Mushroom price	<p>Relatively low if compared with specialty goods and certified mushrooms.</p> <p>The Italian official statistics report a selling price of about 6–15 €/kg for wild fresh mushrooms with no special certification or quality, such as those imported by Dalla Valle from Finland</p>	<p>Relatively high: prices for mushrooms rise from 7 €/kg from the collector to the buyer, to 13–15 €/kg to the broker stores, up to a maximum of €40/kg in a food specialties shop in Milan. However, the final consumer pays normally about 15–25 €/kg. Picking permit prices are about €6–15 (1 day) or €67–150 (1–6 months period)</p>
Product	<p>Only goods (mushrooms: <i>Cantharellus</i> sp., <i>Lactarius</i> spp., <i>Boletus</i> spp.). High quantities but no special quality (three quality categories for different end uses: pickled, sliced, marinated)</p>	<p>Specialty goods (mushrooms: <i>Boletus</i> spp.), high quality, and services (picking-permits, tourism and recreation). EC Protected Geographic Indication (PGI) for 'Fungo di Borgotaro' (territorial marketing)</p>
Place (Physical distribution)	<p>No retail sale at present. Trucks (external services) are delivered directly to Italy. Large companies, restaurants, refreshment, catering</p>	<p>Strong connection territory-product: local retailers, local restaurants for mushrooms; visitors/tourists enjoying the area for picking-permits</p>
Promotion	<p>Magazine, newspaper and television to inform all the pickers at the same time. Four TV channels and all the Finnish newspapers.</p> <p>Specific marketing initiatives are focused on Italian market, on the end users</p>	<p><i>La strada del Fungo Porcino di Borgotaro</i> (an itinerary linking restaurants and agro-tourisms activities—see: <a href="http://www.stradadelfungo.com">http://www.stradadelfungo.com</a>). Twenty-five family-run grocery shops in the valley. Some of the processing companies' websites for e-selling</p>
Political power	<p>Strong link between the firm's owner (Italian) and its main market (Italy)</p>	<p>Strong and positive connections between the Consortium and the local public authorities; <i>comunalia</i> and their association</p>

**Table 3** continued

Marketing mix variables/factors for success or problems	Dalla Valle Company (Finland)	Borgotaro Consortium (Italy)
Public relations	Strong and positive acceptance by the Finnish pickers and rural areas population of the Italian entrepreneur: Dalla Valle Company is perceived as a 'Finnish social event', the firm received a national prize for its business activity and innovation	Strong acceptability by the society due to the positive effects: local population (community forest, <i>comunalia</i> ) and six local enterprises directly involved, 25 families in the valley selling mushrooms in grocery shops, attractive for tourists and visitors for recreational activities
Main factors for successful business	Direct deal relationship between pickers and company's owner, high social acceptance, innovative logistic model (no longer need for pickers to go to the city market places in order to sell the collected mushrooms), short supply chain (cost reduction)	Low instability, low risks, strong connection among different economic and social actors in the area, local historical and cultural roots, strong link between the product and the area (territorial marketing)
Main problems at the moment	Limited availability of pickers, low reliability in some cases, lack of development in logistics, no incentives to renew old trucks for collecting and transporting mushrooms, long distances and large collecting basin (all North Karelia), limited net of roads and infrastructures	Limited quantities of locally produced mushrooms that can be PGI certified and marketed with the label

The two organizations, which are both using *Boletus* mushrooms as raw material and have been created and managed almost during the same period, have been developed according to two distinct models. As regard the network type, while Dalla Valle Company can be classified as a joint unit which has network connections only within its subcontractors, Borgotaro Consortium can be classified as a formalized project group. The first occupies the highest network level proposed by Varamäki and Vesalainen (2003), while the second is placed on a level characterized by a lower strategic intensity. The innovation that differentiates the product in the marketing mix is substantially different. In the Finnish case it is concentrated on the gathering system and three-class mushroom classification. In the Italian case it is instead based on the EC PGI mark and on the system of regulation for picking-permit selling. Another important difference concerns the value-chain. In the first case there is a clear short chain in a strong vertical integration, while in the second the horizontal approach leads to a proper net

system. Of course another relevant difference is that related to the operational scale: Dalla Valle Company operates on a much larger area (the whole of North Karelia) and consequently the number of people involved in mushroom collection is by far greater than for Borgotaro Consortium.

## Conclusions

Different organizational models are possible in marketing a particular NWFP. With respect to wild mushrooms, on the basis of the two case-studies analyzed, the implemented model (and related strategies) depends basically on the pre-established aims of the actors involved, respectively, oriented on private enterprise's profit or on the economic and social development of a defined rural territory. A lead enterprise organized in a traditional way, such as Dalla Valle Company in Finland,—that is relying on vertical integration, key entrepreneurship and short 'captive' value chain—can achieve consistent economic results in terms of income generation (also providing supplementary welcome income opportunities to local collectors) and the success of commercialisation (establishing links between mushroom pickers in rural communities and consumers in a foreign country like Italy). But its impacts on the local territory and its environment seem to be limited; furthermore, this key entrepreneur-based model is more exposed to risk and market instability (seasonality, key entrepreneur role), while there might be a need for monitoring it and eventually implementing policy initiatives aimed at limiting the potential negative impacts of its dominant position in the value chain.

An original form of local network organization, such as Borgotaro Consortium in Italy, involving various economic, social and political actors within a defined area, has proved to be highly effective in promoting the area as a whole and its social and environmental components. The local network provides additional income generation opportunities to a higher number and diversified types of actors upstream, in the meanwhile consolidating the social, cultural and relational values, aiming the community at multi-activities and empowering its bargaining position with respect to downstream intermediaries and consumers (for example by improving market information systems). Also, it has positive environmental impacts (maintenance of local forests health and stability and of NWFPs production capacity). All these aspects are important for rural communities, especially for small-scale landowners and forest managers who are more and more pressed by the actual trends of timber market to search for alternative sources of income, find factors of market stabilisation, improve competitiveness, reduce investment risks, and build strategic alliances. The network-based strategy seems to be worthy of further investigation and replication in other rural areas and for other NWFPs and services as an innovative pattern for rural development. Nevertheless, being networks dynamic structures, their growth and evolution have to be carefully oriented, especially for avoiding conflicts and asymmetries among members. In such a perspective, proper public policies can be needed.

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